**ILIGAN INSTITUTE OF TECHNOLOGY**

College of Education

**Integrated Developmental School**

**COURSE OUTLINE**

**SY 2015 – 2016**

1. **Course Number and Title:** Earth Science
2. **Grade:** 10
3. **Course Credit:** 1.7 units (5hrs/week); 1 semester only
4. **Course Description:**

Earth Science is an interfiled study. Students will use the concepts they have learned from their previous Science subjects to understand and appreciate manmade and natural processes on Earth. The subject introduces the core concepts in Geology, Hydrology as well as Meteorology to cover the major spheres of the Earth (namely the lithosphere, hydrosphere and atmosphere).

1. **Course Outline**
2. What is Earth Science?
   1. Early Evolution of the Earth
   2. Spheres of the Earth and their interactions
3. *Minerals*
   1. Definition of Minerals
   2. Properties of Minerals
   3. Mineral Groups
4. *Rock*
   1. Rock Cycle
   2. IR: Formation, Classification (Extrusive/Intrusive based on texture; Composition for naming IR)
   3. SR: Feature of SR, Sedimentation Process, Classification (Chemical/Detrital)
   4. MR: Agents of Metamorphism, Examples, Introduction on Classification of MR
5. *Weathering ,Soil, Mass Wasting*
   1. Types & Rates of Weathering, Agents of Erosion (Chemical and Mechanical)
   2. Definition of Soil, Controls of Soil Formation, Soil Profile, Soil Types
   3. Rates & Types of Soil Erosion
   4. Controls & Triggers of Mass Wasting; Classification of Mass Wasting
6. *Surface & Ground Water*
   1. Hydrologic Cycle
   2. Factors Affecting Stream Velocity
   3. Works of Streams & Drainage Basins
   4. Distribution, Movement & Geologic Work of Groundwater
   5. Environmental Problems Associated with Groundwater
7. *Glaciers, Deserts, & Wind*
   1. Types of Glaciers , Glacial Motion (Glacial Budget) & Landforms Associated to Glaciers
   2. Effects of Glaciations
   3. Location of Deserts
   4. Landforms associated to deserts
8. *Plate Tectonics*
   1. Development of Plate Tectonics Theory (include proof and evidence)
   2. Type of Plate Boundaries and Structures Associated to these plate type boundaries
9. *Earthquakes & Earth's Interior*
   1. Elastic Rebound Theory
   2. Seismology: Locating and Measuring an Earthquakes Intensity & Magnitude; Earthquake Predictions
   3. Earth's Layered Structure
10. *Volcanoes & other Igneous Activity*
    1. Types of Igneous Activity: Intrusive and Extrusive (Volcanic and Fissure Eruptions)
    2. Types of Volcanoes; Anatomy of Volcanoes and Volcanic Landforms
    3. Nature of Volcanic Eruption: Factors Affecting Viscosity and Types of Volcanic Extrusions
11. *Mountain Building*
    1. Factors Affecting Rock Deformation
    2. Types of Faults and Folds
    3. Isostasy Principle
12. *Geologic Time*
    1. Catastrophism vs. Uniformitarianism
    2. Relative & Radiometric Dating
13. *Ocean Floor*
    1. Geography & Mapping the Ocean Floor
    2. Provinces of the Ocean Floor
    3. Resources from the Seafloor
14. *Ocean Water & Ocean Life*
    1. Composition of Seawater
    2. Ocean Layering
    3. Diversity of Ocean Life & Oceanic Productivity
15. *Dynamic Ocean*
    1. Surface & Deep-Ocean Circulation
    2. Waves, Beaches and Shoreline Processes
    3. Shoreline Features
    4. Tides
16. *Atmosphere: Composition, Structure & Temperature*
    1. Weather vs. Climate, Composition and Structure of the Atmosphere
    2. Earth ś Motion and Seasons
    3. Fate of Incoming Solar Radiation; Controls of Temperature
    4. Greenhouse Effect
17. *Moisture, Clouds & Precipitation*
    1. Humidity & dew-point temperature, Measuring Humidity
    2. Processes that Lift the Air, Types of Stability
    3. Cloud Formation & Types of Clouds, The Bergeron & Collision-Coalescence Process, Types of Precipitation, Measuring Precipitation
18. *Air Pressure & Wind*
    1. Understanding Air Pressure, Measuring Air Pressure
    2. Factors Affecting Wind, Highs & Lows
    3. Idealized Global wind Patterns, General Circulation of the Atmosphere
    4. El Niño & El Niña Phenomena, Local Wind Patterns
19. *Weather Patterns & Severe Storms*
    1. Air Mass, Fronts & Types of Fronts
    2. Mid-Latitude Cyclones
    3. Thunderstorms, Tornadoes & Hurricanes
20. Climate
    1. Koppen Climate Classification
    2. Global Warming
21. **Grading System: Averaging**

Periodical Test – 30% Class Standing – 70%

* Class standing components (quizzes, seatwork, assignment, laboratory experiments/activities, project-based activities, class participation/behavior)

1. **References:**

**Textbook:**

Tarbuck, Edward J. and Frederick K. Lutgens. 2003. Earth Science, 10th Ed. Jurong, Singapore: Pearson Education South Asia Pte. Ltd.

**References**

* Earth Science and the Environment by Graham R. Thompson and Jonathan Turk
* Invitation to Science to Science Inquiry by Tik L. Liem

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